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ABSTRACT

An experiment was conducted to determine if gender differences among preschool children would be found on measures of creative potential. Subjects were 58 English-speaking children, 31 boys and 27 girls, with a mean age of 57.6 months, who attended the Child Development Laboratory School at Oklahoma State University. Subjects were tested individually with the Multidimensional Stimulus Fluency Measure, which consists of three measures: (1) Task 1, naming instances of things that are red and things that are round, (2) Task 2, suggesting the kind of objects that three-dimensional, colored styrofoam shapes could represent, and (3) Task 3, naming all the alternate uses of paper and a box. Conflicting with the findings of previous studies, results did not support the expectation that preschool boys would demonstrate more original responses on the measures than girls. No significant gender differences were found in analyses of popular or original responses to the creativity measures. It is concluded that it is not clear why the expected results did not materialize. The fact that girls had a higher mean score than boys on the patterns task was considered especially puzzling. (RH)

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GENDER EFFECTS IN PRESCHOOL CHILDRENS' CREATIVITY

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This paper was part of a larger study and is based on the thesis of the first author conducted under the direction of the second author. Requests for reprints should be sent to the second author at the Department of Family Relations and Child Development, College of Home Economics, Oklahoma State University, Stillwater OK 74078. A version of this paper was presented at the biennial meeting of the Society for Research in Child Development, Baltimore, April, 1987, under the title: "Personality correlates of creative potential in preschool children".

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Abstract

This experiment was conducted to determine if differences between the genders would be evidenced on measures of creative potential. The subjects were 58 children (31 boys and 27 girls) with a mean age of 57.6 months. The children were tested individually by one of three female examiners using the Multidimensional Stimulus Fluency Measure. This test consists of three measures: instances, pattern meanings, and alternate uses. No gender differences were evidenced on analyses of popular or original responses to the creativity measure.

GENDER EFFECTS IN PRESCHOOL
CHILDREN'S CREATIVITY

Much has been written about creativity, as well as gender differences. However, few research studies have paired the two subjects. Modeling, gender-typed behavior, parental behavioral variables, and cognition may play a relevant part in understanding whether gender differences do exist.

Several theorists feel that the role of imitation and identification are important in the acquisition of a child's gender-typed behavior (Kagan, 1964; Kohlberg, 1966; Mischel, 1970; Mussen, 1969; Sears, 1965). Maccoby and Jacklin (1974) agree that observational learning does occur, and offer two explanations as to how children of both genders learn different things. They feel that the same-gender model is more available, and that children choose same-gender models because of the similarities between themselves and the model.

Edelbrock and Sugawara (1978) discovered that when preschoolers were tested by an opposite-gender experimenter, both boys and girls adhered to gender-appropriate items, and avoided items that were gender-inappropriate. This finding could have a bearing on activities and behaviors of children at preschools and day care centers, since the majority of caretakers are female. Edelbrock and Sugawara also found that boys were more stereotyped than girls.

Block (1983) summarized that there appears to be appreciable gender-differentiated socialization at home and school.

Block found that boys' toys, more often than girl's toys, afforded inventive possibilities, encouraged manipulation, and provided more explicit feedback from the physical world. Girls' toys were found to encourage imitation, and provided less opportunity for variation and innovation. Block suggested that girls, more than boys, are socialized in ways encouraging the use of assimilative strategies for processing new information, while boys are socialized in ways that encourage the use of accommodative strategies when processing new information.

Smith and Daglish (1977) discovered from a questionnaire that parents rated active play, play with transportation toys, aggressive behavior, and exploring behavior as typically masculine behaviors. The authors concluded that stereotyped views of gender-typical behavior are clearly seen in many parents, and these views are partly grounded in actual behavioral differences between boys and girls.

Many of the studies cited do not disregard inborn gender differences as being present. These studies do suggest that gender differences present at birth can be magnified by the child's environment throughout his or her early years. The connection between gender differences, inborn and magnified through socialization practices, and cognition and creativity might be an important one. More specifically, parental behaviors could contribute to certain gender behaviors, which in turn could influence creative potential. Unfortunately, few research studies have focused on the area of gender differences and their relationship to creativity.

Wallach (1970) credits J. P. Guilford and his associates as being some of the first creativity researchers. Guilford believed that the most obvious indications of creativity are found in divergent thinking, which is the process of searching for material that is only loosely related to what is already known, so that the mind is free to think in several different directions. Guilford believed that ideational fluency was a subprocess of divergent thinking. Ideational fluency, according to Guilford, refers to the ability to generate ideas that will fulfill particular requirements, such as naming uses for bricks.

Mednick (1962) postulated a response hierarchy, in which during a testing process, a person will give usual, more mundane responses first, and then more creative, unique responses afterwards. The creative individual, according to Mednick, will be less fixated upon the common associations to an idea and be more capable of reaching the distant associations.

Starkweather (1964) was one of the pioneers in recognizing the need and importance of measuring creativity specifically in preschoolers. Starkweather believed that the materials used in creativity studies with older children were inappropriate for preschoolers because of the two-dimensional aspect of the material. Young children needed to be able to handle the materials. To remedy this problem, Starkweather devised a measure of simple, three-dimensional objects cut into styrofoam shapes, which she used in her studies. Moran, Milgram, Sawyers, and Fu (1983) adapted

Starkweather's materials, and found that three-dimensional stimuli were more appropriate measures of original thinking in preschool children than those consisting of two-dimensional stimuli. Another finding to surface from this study was that boys generated more original ideas than girls, so the possibility of gender differences relating to creativity was mentioned in one of the few times this issue has been addressed in preschoolers.

Sawyers, Moran, and Tegano (1987) have devised a theoretical model of creative potential in young children. These authors conceptualize that there is a developmental progression in creative behaviors. For young children, the criterion is originality; for older children, the component of quality is added; and for adults, the criterion also includes significance. In this model, cultural and biological factors, such as lifestyles and gender, can have a direct bearing on contextual factors, such as teacher and parent behavior. Also, cognitive processes, such as convergent and divergent thinking make an impact on the ideational fluency present in a child.

After reviewing the previous studies on socialization practices, it seems that a study determining if there are gender differences related to creativity would be an important one. At this point, no attempt to ascertain the causes (e.g., biological or socialization) will be made.

Method

Subjects

The subjects were English-speaking preschool children

in Stillwater, Oklahoma, enrolled in the Oklahoma State University Child Development Laboratory School. A total of 58 subjects participated in the study, 31 boys and 27 girls, with a mean age of 57.6 months (Range: 3 years, 10 months to 6 years, 0 months). Mean age for boys was 58.5 months, with the mean age for girls equal to 56.6 months. This sample included a 7% minority population. Laboratory school children excluded from the study were those who were under the age limit of 45 months, or international children who had been in the United States for less than one year. The reason for this exclusion was to provide some control of verbal ability in English with the international children.

Materials/Stimuli

The Multidimensional Stimulus Fluency Measure (Moran, Milgram, Sawyers, & Fu, 1983) for ideational fluency was used. This test consists of three measures, instances, pattern meanings, and alternate uses, with two items per measure. In the instances task, the stimulus items are things that are red and things that are round. Subjects are asked to name all the items they can think of that have the specific features named. In the pattern meanings task, three-dimensional, various-colored styrofoam shapes are used. The child is asked what kind of objects the shapes could represent. In the alternate uses task, the child is asked to name all the various uses of a box, and then, paper. (See Appendix B).

Procedure

The testing was completed over a five-week period, and

was done in the mornings, during the children's self-select activity times. Each child was given the Multidimensional Stimulus Fluency Measure individually by one of three female examiners in a room relatively free from other stimuli. No child was forced to participate in the study. Each session took approximately 15-20 minutes, or as long as the child generated responses. There were no time limits for the children's responses.

There were two testing sessions, approximately two weeks apart, for each child. In session one, instances and patterns were given. The alternate uses measure was administered in the second session. The children had a different examiner for each session.

During the examining sessions, all of the children's responses were written down by the examiners. The examiners did not voice any approval or disapproval regarding the children's responses. The sessions were also tape-recorded, in order to aid the coding process. The children were assigned numbers for coding, and these numbers were used exclusively on the data sheets and tape recordings.

Results

The data was analyzed using a 2 x 3 repeated measures analysis of variance with gender as the between group variable and task (instances, patterns, and uses) as the within group variable. Three separate ANOVAs were conducted with either original, popular, or total fluency scores operating as the dependent variable.

Additional 2 x 2 repeated measures ANOVAs were

conducted for items within each task, (e.g., with gender as between group; box and paper as within group). Each of these analyses was conducted for each of the three dependent variables: original, popular, and total fluency scores.

Since original scores are considered the most crucial on the Multidimensional Stimulus Fluency Measure, only original scores are discussed here. (See Appendix E for information on popular and total fluency scores). None of the other analyses, including those on popular and total fluency scores, showed significance related to gender. For original scores, only the gender x task analysis yielded close to significant data regarding gender effects. On the 2 x 3 ANOVA for original scores, there is a significant effect of task, $F(2,55) = 13.06$, $p < .001$, although this difference is not pertinent to the present study and is consistent with previous published data on this instrument. The gender x task interaction only approached significance, $F(2,55) = 2.73$, $p < .08$. The latter effect results from a higher mean score for boys on the Uses task, and girls providing a slightly higher mean score than boys on the Patterns task with no mean differences evidenced on the Instances task (See Table 1).

Insert Table 1 about here

Discussion

The results obtained in this study did not support the

expectation that preschool boys would demonstrate more original responses on a creativity measure. It is not clear as to why the expected results did not materialize.

Many of the arguments used to demonstrate the plausibility of the hypothesis involved socialization practices and modeling. Yet, Maccoby and Jacklin (1974) maintain that if a child does not perform actions that have been suggested through observational learning, the reason might be that the necessary eliciting conditions did not occur. Perhaps, this theory could have a bearing on the present study, in that no eliciting conditions did occur. Since the Multidimensional Stimulus Fluency Measure is designed to be neutral and not gender-biased, the children did not have an outlet in which to demonstrate learned gender-appropriate behaviors. Even if the children demonstrated learned gender-appropriate remarks, they would have no bearing on the results, unless the remarks were scored as original ones. Also, the Multidimensional Stimulus Fluency Measure was performed under conditions which do not allow feedback for responses. The children could not elicit gender-appropriate remarks from the three female examiners, because of the neutrality of their positions.

Other arguments used to defend the hypothesis involved the different socialization practices with the two genders. Smith and Daglish (1977) found that stereotyped views of gender-typical behavior are clearly seen in many parents. However, these researchers concede that although parental

stereotyped views are partly grounded in actual behavioral differences between girls and boys, parents probably tend to exaggerate such differences. It must also be taken into account that roughly ten years have passed since these studies were performed. Due to increased publicity through the media and written sources about stereotypical labels and treating the genders equally, it seems likely that parents, and especially teachers, are more knowledgeable about and are less apt to promote differential socialization of the genders. This factor could have influenced the present study. Since the majority of the subjects have been in the university lab school for several years, they might not have been exposed to a great amount of differential socialization practices, due to the educated practices of the teaching staff and the relatively homogeneous nature of the parent population. Perhaps a sample of children from a different environment would have yielded different results.

Regarding creativity studies, it is not clear why this study did not find the same results as the Moran, Milgram, Sawyers, & Fu (1983) study. In the Moran, et al. study, preschool boys generated more original ideas than preschool girls, after comparing two-dimensional stimuli to three-dimensional stimuli. Since the present study also used three-dimensional stimuli, one is hard-pressed to speculate on why there were different results. It is especially puzzling since the females in the present study actually had a higher mean score on the Patterns task than males.

Perhaps the best guess, at this point, is that the findings from the previous study were specific to that sample and that gender differences in creative potential, as measured by the Multidimensional Stimulus Fluency Measure with middle-class samples, do not exist. This is not to imply that gender differences do not play a part in other components of creativity.

Regarding the Sawyers, Moran, and Tegano (1987) model, perhaps this study has shown that there are not gender differences in preschoolers' creative potential. Whether differences arise at later stages of development when other factors gain more influence (e.g., personality factors such as conformity and risktaking during the self-evaluation process postulated for elementary school children) is still unanswered and a topic worthy of continued investigation.

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Table 1

Means and Standard Deviations for Original Scores by Task and Gender

Gender	Task		
	Instances	Patterns	Uses
Male	7.16 (7.60)	4.67 (3.71)	3.74 (5.26)
Female	7.26 (5.60)	6.00 (3.80)	2.41 (2.25)